CLAIMS:

1. A magnet device in which two sets of static magnetic field generation sources, each being constituted by current carrying means disposed substantially concentrically with respect to a first direction in order to generate a uniform magnetic field directing in the first direction in a finite region, are disposed facing each other while placing the uniform magnetic field region therebetween and each of the static magnetic field generation sources is provided with at least four current carrying means, characterized in that when assuming a crossing point of a first axis which is in parallel with the first direction and passes substantially the center of the current carrying means and a second axis which crosses the first axis orthogonally and locates at substantially the equal distance from the two sets of the static magnetic field generation sources as a first point and further assuming a first straight line contained on a first plane defined by the first axis, the second axis and the first point and passing through the first point, the current carrying means are disposed in such a manner that, when geometrical centers of cross sections of the current carrying means on the first plane are projected on the first straight line, the current carrying direction of the current carrying means at the respective corresponding projections of each of the static magnetic field generation sources aligns alternatively in positive and negative direction on the first straight line.

2. A magnet device in which two sets of static magnetic field generation sources, each being constituted by current carrying means and shielding current carrying means for suppressing leakage magnetic field to an external region disposed substantially concentrically with respect to a first direction in order to generate a uniform magnetic field directing in the first direction in a finite

region, are disposed facing each other while placing the uniform magnetic field region therebetween and each of the static magnetic field generation sources is provided with at least four current carrying means and at least one shielding current carrying means, characterized in that when assuming a crossing point of a first axis which is in parallel with the first direction and passes substantially the center of the current carrying means and a second axis which crosses the first axis orthogonally and locates at substantially the equal distance from the two sets of the static magnetic field generation sources as a first point and further assuming a first straight line contained on a first plane defined by the first axis, the second axis and the first point and passing through the first point, the current carrying means are disposed in such a manner that, when geometrical centers of cross sections of the current carrying means on the first plane are projected on the first straight line, the current carrying direction of the current carrying means at the respective corresponding projections of each of the static magnetic field generation sources aligns alternatively in positive and negative direction on the first straight line.

3. A magnet device in which two sets of static magnetic field generation sources, each being constituted by current carrying means disposed substantially concentrically with respect to a first direction in order to generate a uniform magnetic field directing in the first direction in a finite region, are disposed facing each other while placing the uniform magnetic field region therebetween and each of the static magnetic field generation sources is provided with a ferromagnetic body functioning as a magnetic pole and at least two current carrying means, characterized in that when assuming a crossing point of a first axis which is in parallel with the first direction and passes substantially the center of the current carrying means and a second axis which crosses the first axis

orthogonally and locates at substantially the equal distance from the two sets of the static magnetic field generation sources as a first point and further assuming a first straight line contained on a first plane defined by the first axis, the second axis and the first point and passing through the first point, the current carrying means are disposed in such a manner that, when geometrical centers of cross sections of the current carrying means on the first plane are projected on the first straight line, the current carrying direction of the current carrying means at the respective corresponding projections of each of the static magnetic field generation sources aligns alternatively in positive and negative direction on the first straight line.

4. A magnet device in which two sets of static magnetic field generation sources, each being constituted by current carrying means and shielding current carrying means for suppressing leakage magnetic field to an external region disposed substantially concentrically with respect to a first direction in order to generate a uniform magnetic field directing in the first direction in a finite region, are disposed facing each other while placing the uniform magnetic field region therebetween and each of the static magnetic field generation sources is provided with a ferromagnetic body functioning as a magnetic pole, at least two current carrying means and at least one shielding current carrying means, characterized in that when assuming a crossing point of a first axis which is in parallel with the first direction and passes substantially the center of the current carrying means and a second axis which crosses the first axis orthogonally and locates at substantially the equal distance from the two sets of the static magnetic field generation sources as a first point and further assuming a first straight line contained on a first plane defined by the first axis, the second axis and the first point and passing through the first point, the current carrying means are disposed in such a manner

that, when geometrical centers of cross sections of the current carrying means on the first plane are projected on the first straight line, the current carrying direction of the current carrying means at the respective corresponding projections of each of the static magnetic field generation sources aligns alternatively in positive and negative direction on the first straight line.

5. A magnet device in which two sets of static magnetic field generation sources, each being constituted by current carrying means disposed substantially concentrically with respect to a first direction in order to generate a uniform magnetic field directing in the first direction in a finite region, are disposed facing each other while placing the uniform magnetic field region therebetween and each of the static magnetic field generation sources is provided with three current carrying means, characterized in that when assuming a crossing point of a first axis which is in parallel with the first direction and passes substantially the center of the current carrying means and a second axis which crosses the first axis orthogonally and locates at substantially the equal distance from the two sets of the static magnetic field generation sources as a first point and further assuming a first straight line contained on a first plane defined by the first axis, the second axis and the first point and passing through the first point, the current carrying means on the first plane are projected on the first straight line, the current carrying direction of the current carrying means at the respective corresponding projections of each of the static magnetic field generation sources aligns alternatively in positive and negative direction on the first straight line.

6. A magnet device in which two sets of static magnetic field generation sources, each being constituted by current carrying means and shielding current carrying means for suppressing leakage

magnetic field to an external region disposed substantially concentrically with respect to a first direction in order to generate a uniform magnetic field directing in the first direction in a finite region, are disposed facing each other while placing the uniform magnetic field region therebetween and each of the static magnetic field generation sources is provided with three current carrying means and at least one shielding current carrying means, characterized in that when assuming a crossing point of a first axis which is in parallel with the first direction and passes substantially the center of the current carrying means and a second axis which crosses the first axis orthogonally and locates at substantially the equal distance from the two sets of the static magnetic field generation sources as a first point and further assuming a first straight line contained on a first plane defined by the first axis, the second axis and the first point and passing through the first point, the current carrying means are disposed in such a manner that, when geometrical centers of cross sections of the current carrying means on the first plane are projected on the first straight line, the current carrying direction of the current carrying means at the respective corresponding projections of each of the static magnetic field generation sources aligns alternatively in positive and negative direction on the first straight line.

7. A magnet device according to one of claims 1-4, characterized in that when the geometric centers of the cross sections of the current carrying means are projected on the first straight line on the first plane, the absolute values of magnetomotive force of the current carrying means in the respective static magnetic field generation sources at the corresponding projections align on the first straight line in either descending order or ascending order.

8. A magnet device according to claim 5-6, characterized in that when the geometric centers of the cross sections of the current carrying means are projected on the second axis on the first plane, the absolute values of magnetomotive force of the current carrying means in the respective static magnetic field generation sources at the corresponding projections align on the second axis in either descending order or ascending order.

9. A magnet device according to one of claims 1-8, characterized in that in each of the static magnetic field generation sources, the absolute values of magnetomotive force of the current carrying means having the largest average radius among the current carrying means is larger than the absolute values of the magnetomotive force of other currently carrying means.

10. A magnet device according to one of claims 1-9, characterized in that each of the static magnetic field generation sources includes at least one ferromagnetic body which helps formation of the magnetic field.

11. A magnet device according to claim 10, characterized in that the ferromagnetic body functions as a magnetic pole.

12. A magnet device according to one of claims 1-11, characterized in that the magnetic device further comprises an external ferromagnetic body which covers the outside of the two sets of static magnetic field generation sources and forms a magnetic passage to suppress leakage magnetic field.

13. A magnet device according to claim 12, characterized in that the external ferromagnetic body includes a disk shaped ferromagnetic body and a column shaped ferromagnetic body.

14. A magnet device according to one of claims 1-13, characterized in that the current carrying means is constituted by a material having a super conducting property, and the two sets of static magnetic field generation sources includes a cooling means which cools the current carrying means to a temperature at which the current carrying means shows the super conducting property and maintains the same at the temperature.

15. An MRI device which uses the magnet device according to one of claims 1-14.

16. An MRI device including the magnet device according to one of claims 1-14, which applies the magnetic field in such a manner that the main magnetic flux direction is perpendicular with respect to the face of a stand on which a measurement object is laid.

17. A super conducting magnetic device for an open and vertical magnetic field type MRI device including a first and a second static magnetic field generation source which are disposed in vertical direction opposing each other while sandwiching a space for receiving a person to be inspected, each of the first and second static magnetic filed generation sources includes static magnetic filed generation use coil units of equal to or more than three which are arranged concentrically around the center axis in vertical direction thereof, characterized in that, the directions of DC current flow in the static magnetic field generation use coil units of equal to or

more than three in each of the static magnetic field generation sources are determined alternative in positive and negative direction with reference to projection positions of geometric centers of cross sections of the respective coil units of equal to or more than three on a straight line passing through a crossing point, on a plane which is perpendicular to the central axis in vertical direction and contains a horizontal axis having an equal distance both from the first and second static magnetic field generation sources, of the center axis and the horizontal axis and at the side of the straight line away from the horizontal axis when viewed from the respective coil units of equal to or more than three.

18. A super conducting magnet device for an open and vertical magnetic field type MRI device including a pair of static magnetic field generation sources which are disposed in vertical direction opposing each other while sandwiching a space having a broad opening for receiving a person to be inspected, and each of the pair of static magnetic field generation sources includes a main coil unit for the static magnetic field generation having first diameter and being disposed concentrically with the center axis in vertical direction thereof, a plurality of coil units for irregular magnetic field correction each having a diameter smaller than the first diameter and being likely disposed concentrically with the center axis in vertical direction thereof and shielding coil unit for suppressing magnetic field leakage having substantially the same diameter as the first diameter and being disposed concentrically with the center axis in vertical direction thereof but being located distant position than the main coil unit for static magnetic field generation with respect to the space, characterized in that, the directions of DC current flow in the main coil unit for static magnetic field generation and the plurality of coil units for irregular magnetic filed

correction in each of the static magnetic field generation sources are determined alternative in positive and negative direction with reference to projection positions of geometric centers of cross sections of the main coil unit for static magnetic field generation and the plurality of the coil units for irregular magnetic field correction on a straight line passing through a crossing point, on a plane which is perpendicular to the center axis in vertical direction and contains a horizonal axis having an equal distance both from the first and second static magnetic field generation sources, of the center axis and the horizontal axis and at the side of the straight line away from the horizonal axis when viewed from the main coil unit for static magnetic field generation and the plurality of coil units for irregular magnetic field correction, as well as the direction of DC current flow in the shielding coil unit is determined to be opposite to the direction of the DC current flow in the main coil unit for static magnetic field generation.

19. A magnetic device including a pair of static magnetic field generation sources for generating a uniform magnetic field directing in a first direction in a finite region each of the static magnetic field generation sources being provided with at least two current carrying means disposed concentrically, characterized in that, the at least two current carrying means are disposed concentrically while being spaced each other and further when assuming a crossing point of a first axis which is in parallel with the first direction and passes substantially the center of the current carrying means and a second axis which crosses the first axis orthogonally and locates at substantially the equal distance from the respective static magnetic field generation sources as a first point, the current carrying means are disposed in such a manner that when geometrical centers of cross sections of the current carrying means are projected on a first straight line on a

first plane containing the first axis, the second axis and the first point and passing through the first point, the current carrying means at the respective corresponding projections aligns alternatively in positive and negative direction on the first straight line.

20. A super conducing magnetic device for an open and vertical magnetic field type MRI device including a first and a second static magnetic field generation source which are disposed opposing each other while sandwiching a space for receiving a person to be examined, each of the first and second static magnetic field generation sources includes static magnetic field generation use coil units of equal to or more than three which are arranged concentrically with the central axis passing through the center thereof, characterized in that, the static magnetic field generation use coil units of equal to or more than three in each of the static magnetic field generation sources are arranged in such a manner that within an angle range defined by a first line segment on a plane containing the center axis and extending in a direction perpendicular to the center axis from a center point on the center axis having substantially the same distance from both first and second static magnetic field generation sources and a second line segment extending from the center point toward the static magnetic field generation use coil unit located most inside and most close with respect to the space within the plane, when the geometric centers of the cross sections of the respective static magnetic field generation use coil units are projected on any straight line while locating the first line segment therebetween, the current flow directions of the static magnetic field generation use coil units at the respective corresponding projection points align alternatively in positive and negative direction on the straight line.

21. A super conducting magnet device for an open and vertical magnetic field type MRI device including a pair of static magnetic field generation sources which are disposed opposing each other while sandwiching a space having a broad opening for receiving a person to be examined, and each of the pair of static magnetic field generation sources includes a main coil unit for the static magnetic field generation having a first diameter and being disposed concentrically with the center axis passing the center of the static magnetic field generation sources, a plurality of coil units for irregular magnetic field correction each having diameter smaller than the first diameter and being disposed concentrically with the center axis thereof and a shielding coil unit for suppressing magnetic field leakage having substantially the same diameter as the first diameter and being disposed concentrically with the center axis thereof but being located distant position than the main coil unit for static magnetic field generation with respect to the space, characterized in that, the main coil unit for static magnetic field generation and the plurality of coil units for irregular magnetic field correction in each of the static magnetic field generation sources are arranged in such a manner that within an angle range defined by a first line segment on a plane containing the center axis and extending in a direction perpendicular to the center axis from a center point on the center axis having substantially the same distance from both first and second static magnetic field generation sources and a second line segment extending from the center point toward the coil unit for irregular magnetic field correction located most inside and most close with respect to the space within the plane, when the geometric centers of the cross sections of the main coil unit for static magnetic field generation and the plurality of unit coils for irregular magnetic field correction are projected on any straight line while locating the first line segment therebetween, the current flow directions of the mail coil unit for static magnetic field

generation and the plurality of unit coils for irregular magnetic field correction at the respective corresponding projection points align alternatively in positive and negative direction on the straight line as well as the direction of DC current flow in the shielding coil unit is determined to be opposite to the direction of the DC current flow in the main coil unit for static magnetic field generation.